

CLAIMS

1. A welding method for welding a motorcycle fuel tank (12), using a plurality of opening/closing mechanisms (47) having one or more attachments (24), for bringing the attachments (24) into and out of abutting engagement with the fuel tank (12), comprising the steps of:

bringing the attachments (24) into abutting engagement with the fuel tank (12) by operating said opening/closing mechanisms (47), thereby holding said fuel tank (12); and

bringing the attachments (24) out of abutting engagement with the fuel tank (12) by operating said opening/closing mechanisms (47), in an order in which the attachments (24) are approached by a welded spot (M) where the fuel tank (12) is welded, as said welded spot (M) moves along a welding line (V).

2. A welding method according to claim 1, wherein said attachments (24) hold said fuel tank (12) through resilient bodies (64).

3. A welding method according to claim 1, wherein said fuel tank (12) comprises:

an outer side panel (14) having inwardly extended ends; and

an inner side panel (16) welded to said outer side panel (14),

wherein said attachments (24) hold the fuel tank (12) while outer surfaces of the ends of said outer side panel (14) and inner surfaces of ends of said inner side panel (16) are superposed, or while the ends of said outer side panel (14) and the ends of said inner side panel (16) are in abutment against each other.

4. A welding method according to claim 1, wherein said attachments (24) are brought out of abutting engagement with said fuel tank (12) by said opening/closing mechanisms (47), when said welded spot (M) reaches a point spaced 20 mm or less from a reference point (Q2) on said welding line (V), which is closest to an abutment point (P) where each of said attachments (24) and said fuel tank (12) abut against each other.

5. A welding system (10) for welding a motorcycle fuel tank (12), which has an outer side panel (14) having inwardly extended ends and an inner side panel (16) welded to said outer side panel (14), comprising:

a plurality of opening/closing mechanisms (47) having one or more attachments (24), for bringing said attachments (24) into and out of abutting engagement with said fuel tank (12);

a welding machine (10c) automatically operable for welding said fuel tank (12); and

a controller (10d) connected to said opening/closing

mechanisms (47) and said welding machine (10c),

wherein said controller (10d) controls said opening/closing mechanisms (47) to bring said attachments (24) into abutting engagement with said fuel tank (12) to hold said fuel tank (12), and thereafter, said controller (10d) determines a position of a welded spot (M) where said fuel tank (12) is welded by said welding machine (10c), and the positions of said attachments (24), and if a relative position of said welded spot (M) with respect to each of said attachments (24) satisfies a predetermined standard, then said controller (10d) controls at least one of said opening/closing mechanisms (47) to bring said attachments (24) out of abutting engagement with said fuel tank (12).

6. A welding jig (10a) for holding a motorcycle fuel tank (12) when the fuel tank (12) is welded, comprising:

a plurality of attachments (24) for holding said fuel tank (12) through resilient bodies (64).

7. A welding jig according to claim 6, wherein said attachments (24) are mounted on respective arms (26), each of said arms (26) having respective opening/closing mechanisms (47); and

when said arms (26) are fully opened, said arms (26) are opened wide enough to allow said fuel tank (12) to be attached and detached, and when said arms (26) are fully closed, said arms (26) are positioned by respective stoppers

(26b) to hold said fuel tank (12) with said attachments (24).

5 8. A welding jig according to claim 6, wherein said attachments (24) comprise pressing force adjusters (60) for adjusting a pressing force with which said fuel tank (12) is held.

10 9. A welding jig according to claim 6, further comprising:

an outer jig (18) for supporting an outer side panel (14) of said fuel tank (12); and

an inner jig (20) for supporting an inner side panel (16) of said fuel tank (12),

15 wherein said attachments (24) are provided in said outer jig (18), and hold side portions and/or end portions of said outer side panel (14).

20 10. A welding jig according to claim 9, wherein said outer side panel (14) of said fuel tank (12) comprises inwardly extended ends,

25 wherein said attachments (24) hold said fuel tank (12) while outer surfaces of the ends of said outer side panel (14) and inner surfaces of ends of said inner side panel (16) are superposed, or while the ends of said outer side panel (14) and the ends of said inner side panel (16) are in abutment against each other.

11. A welding jig according to claim 6, further comprising:

5 a positioning mechanism (44) for insertion into a fuel inlet (36) defined in an upper surface of said fuel tank (12), and contacting an inner portion of said fuel tank (12) to hold said fuel tank (12).

10 12. A welding jig according to claim 6, wherein each of said attachments (24) has a distal end abutting against said fuel tank (12), said distal end having a tilting mechanism (68) tiltable in any direction.